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PATENT
Docket No. 10400-000141/US
IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant(s): Stig HOLM et al.

Int'l Application No.: PCT/SE2003/001176

Application No.: **NEW APPLICATION**

Filed: February 11, 2005

For: METHOD AND DEVICE FOR PRODUCING BIOGAS

LETTER

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314
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February 11, 2005

Sir:

Amended sheets are attached hereto (which correspond to Article 19 amendments), as required by 35 U.S.C. § 371(c)(3). The Article 19 amended sheets are incorporated in the included Preliminary Amendment.

Respectfully submitted,

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CLAIMS

1. A method of producing biogas by anaerobic digestion of organic matter, characterised by grinding organic matter, mixing the organic matter with a liquid to form a slurry with a dry solids content of 15-45% by weight TS, feeding the slurry to a tank reactor (2; 102; 202; 302) and, in the tank reactor, contacting the slurry with biogas-producing bacteria for digestion under anaerobic conditions, and digesting the slurry in the tank reactor (2, 102; 202; 302) at a dry solids content of 5-10% by weight TS while producing biogas.
2. A method as claimed in claim 1, in which the ground organic matter is mixed with a liquid to form a slurry with a dry solids content of 20-40% by weight TS.
3. A method as claimed in claim 1 or 2, in which at least half of the total dry solids of the slurry originates from grain and/or dried grain offal and/or mixtures thereof.
4. A method as claimed in claim 3, in which the grain is essentially present in the form of whole and screened grains.
5. A method as claimed in any one of the preceding claims, in which organic matter of a type other than the first-mentioned organic matter is also digested in the reactor (202; 302), at least 10% by weight of the total dry solids introduced into the reactor originating from grain and/or dried grain offal included in the first-mentioned organic matter.
6. A method as claimed in any one of the preceding claims, in which the liquid with which the organic matter is mixed is essentially pure water.
7. A method as claimed in any one of claims 1-5, in which the liquid with which the organic matter is mixed

at least partly is digested sludge which is removed from the reactor (2; 102; 202; 302).

8. A method as claimed in any one of the preceding claims, in which the organic matter is dried to a dry 5 solids content of at least 70% by weight TS before being ground.

9. A device for producing biogas by anaerobic digestion of organic matter, characterised in that the device (1; 100; 200; 300) comprises a premixing tank 10 (18; 118; 218; 318) for mixing ground organic matter with a liquid to a slurry with a dry solids content of 15-45% by weight TS and a feed pipe (26, 4; 126, 104; 204; 304) for feeding the slurry to a sealable, essentially gas-tight tank reactor (2; 102; 202; 302) for digesting the 15 slurry at a dry solids content in the tank reactor (2; 102; 202; 302) of 5-10% by weight TS, said tank reactor (2; 102; 202; 302) having an agitator (10; 110) for agitating the matter in the tank reactor (2; 102; 202; 302), an inlet (4; 104; 204; 304) for slurry from the 20 premixing tank (18; 118; 218; 318) and outlets (6, 8; 106, 108; 206, 208; 306, 308) for produced biogas and formed digested sludge.

10. A device as claimed in claim 9, in which a mill (14; 114; 214; 314) is arranged for grinding the organic 25 matter before being introduced into the premixing tank (18; 118; 218; 318).

11. A device as claimed in claim 9 or 10, in which a supply pipe (122; 222) is arranged for feeding digested sludge from the reactor (102; 202) to the premixing tank 30 (118; 218).